REMARKS

Claims 1-13, 22-35 and 37-40 are pending in this application.

I. Interview

The courtesies extended to Applicants' representative by Examiner William Phillip Fletcher III at the interview held July 16, 2008, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicants' record of the interview.

II. Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 1-13, 22-35, and 37-40 under 35 U.S.C. §103(a) as being unpatentable over Applicants' admitted prior art or U.S. Patent No. 3,028,251 to Nagel (hereinafter "Nagel") in view of U.S. Patent No. 5,593,807 to Sacripante et al. (hereinafter "Sacripante"). Applicants respectfully traverse the rejection.

A. Claims 1, 13, and 37

The Office Action mailed January 10, 2008, recognizes that Applicant's admitted prior art and Nagel fail to disclose a process of coating where the powder coating particles are formed by aggregating and coalescing particles in an aqueous dispersion and that Sacripante does not explicitly teach a particular application method for the particles. The Office Action mailed May 19, 2008 alleges that both Nagel and the admitted prior art are silent with respect to the geometric size distribution (GSD) providing nothing contrary to the claims taught by Sacripante. See Office Action, page 2, lines 12-14. Applicants respectfully disagree.

Claims 1, 13, and 37 recite that the GSD for the powder coating particles is "about 1.10 to about 1.25." One of ordinary skill in the art would recognize that the GSD is expressed as (volume D84/volume D16)$^{(1/2)}$. If the particles were arranged from smallest to largest, the particle diameter at the point where 16% of the total toner particle volume is below that point is defined as volume D16, and the particle diameter at which at 84% of the

total toner particle volume is reached is defined as volume D84. Therefore, a GSD of 1.10 to 1.25 would require that the D16 and the D84 have relatively similar values, which would result in a particle size distribution where the majority of the particles are very close to the average particle size (D50). This narrow particle size distribution is desired for "providing a thin film coating of uniform thickness to a substrate by means of a powder coating composition." See specification, paragraph [0008].

For example, consider the various hypothetical D84 and D16 values in the following table:

D84	D16	(D84/D16)^0.5
1.01	1.00	1.005
1.05	1.00	1.025
1.10	1.00	1.049
1.15	1.00	1.072
1.20	1.00	1.095
1.30	1.00	1.140
1.40	1.00	1.183
1.50	1.00	1.225
1.60	1.00	1.265
1.70	1.00	1.304
2.00	1.00	1.414
3.00	1.00	1.732
4.00	1.00	2.000
6.00	1.00	2.449
10.00	1.00	3.162

It can be observed from the table that for a GSD of about 1.10 to about 1.25, D84 can only be about 1.2 to about 1.55 times bigger than D16, respectively. Given the above calculations, Applicants respectively submit that one of ordinary skill in the art would recognize that Nagel teaches away from the process for powder coating described in claims 1, 13 and 37 because Nagel prefers a broad range of particle sizes (a larger GSD), i.e., a range where D84 would not be close to D16, as discussed below.

First, Nagel teaches that the particle size distribution within the desired range "should be relatively broad," and should only "drop sharply to zero percentage at the minimal and the

maximal ends of the distribution." See Nagel, col. 6, lines 42-49, reproduced below for convenience (emphasis added).

> From the foregoing, it will be appreciated that, from the standpoint of particle size distribution, I prefer to have relatively broad range of particle sizes which drops sharply to zero percentage at the minimal and the maxi-mal ends of the distribution. This preference is in addition to that of having an average particle size falling within the range of about 50 microns to about 300 microns.

Rather than a concentration of particles around the median particle size, this would result in a dispersed concentration of particles throughout the range of sizes. Yielding a larger GSD when the respective numbers are inserted into the above equation.

Even using a Gaussian distribution and an average particle diameter of 50 microns or 300 microns with the GSD of claims 1, 13, and 37, narrow size ranges are obtained. For example, with an average particle diameter of 50 microns and GSD of 1.1, D16 and D84 are approximately 45 and 55 microns, respectively; and for a GSD of 1.25, D16 and D84 are approximately 61 and 39 microns, respectively. Additionally, for an average particle diameter of 300 microns, and a GSD of 1.1, D16 and D84 are approximately 328 and 272 microns, respectively; for a GSD of 1.25, D16 and D84 are approximately 366 and 234 microns, respectively. Applicants respectfully submit that Nagel teaches away from such narrow particle diameter ranges.

Nagel teaches that a wide distribution of particle sizes is desired to produce a "more fluidized bed than a narrow range of particle sizes." See Nagel, col 6, lines 12-21, reproduced below for convenience (emphasis added).

> ...In general, I have found that a relatively broad range produces a more stable fluidized bed than a narrow range. This is believed to be due to the smaller particles filling the voids between the larger particles.
>
> Although I have found that a relatively broad range of particle sizes in my composition is desirable in

> that it produces a more stable fluidized bed than a narrow range of particle sizes, I have found that it is desirable to observe definite limitations as to the particle size distribution of my composition. I have found that an excess of coarse particles in a fluidized bed of the composition tends to cause an undesirable surging of the bed and to produce imperfect coatings which are frequently grainy in appearance.

Nagel teaches away from a GSD 1.10 to 1.25 because such a narrow distribution of sizes would not be able to "fill the voids" between the larger particles because all the particles are so close in diameter. For example, given a 50 micron average particle size and a GSD of 1.1, a 45 micron particle is not going to effectively fill the void between two other particles in the distribution; and for a GSD of 1.25, a 39 micron particle is not going to fill the void between two other particles in the distribution.

However, given an average particle size of 50 microns and a larger GSD of approximately 3, D16 and D84 are approximately 90 and 10 microns. Under these conditions, the smaller particles in this broader range would fill the void between the larger particles and result in a "more stable fluidized bed than a narrow range of particle sizes," according to Nagel. Thus, Nagel fails to disclose the GSD of claims 1, 13, and 37 and in fact teaches away from the claimed GSD because it is geometrically impossible for particles of such a narrow size distribution to fill the voids between the larger particles as desired by Nagel.

Therefore, for at least the reasons noted above, Nagel fails to teach each and every feature for claims 1, 13 and 37. Despite their asserted teachings the alleged admitted prior art and Sacripante do not cure the deficiencies of Nagel.

In regards to admitted prior art, at pages 1 and 2 of the specification, details regarding desired particle size or GSD range are not provided. However, the admitted prior art relates to powder compositions obtained by extrusion and pulverization methods. This process

produces "powder compositions [that] consist of irregularly shaped particles in a wide range of sizes." See specification, paragraph [0006]. Alternatively, claims 1, 13 and 37 utilize "powder formed by aggregating and coalescing particles in an aqueous dispersion." This is a process "by which narrow particle size distribution can be achieved without classification." See specification, paragraph [0019].

Therefore, claims 1, 13, and 37 would not have been obvious because Applicants' alleged admitted prior art, Nagel and Sacripante, considered either separately or combined, fail to teach or suggest each and every feature of claims 1, 13, and 37. Claims 2-12, 22-35, and 38-40 variously depend from claims 1, 13, and 37 and, thus, also would not have been rendered obvious by Applicants' alleged admitted prior art, Nagel and Sacripante. Accordingly, favorable reconsideration and withdrawal of the rejection are respectfully requested.

B. <u>Claims 5 and 6</u>

Applicants further submit that the process for powder coating of claims 5 and 6 is not rendered obvious by the applied references because Nagel teaches away from an "excessive proportion" of particles under 5 microns. See Nagel, col. 6, lines 17-26.

As discussed above, the Office Action acknowledges Applicant's admitted prior art and Nagel fail to disclose a process of coating where the powder coating particles are formed by aggregating and coalescing particles in an aqueous dispersion and that Sacripante does not explicitly teach a particular application method for the particles.

Claims 5 and 6 recite specific particle sizes in the range of "less than or equal to about 30 microns," and "3 to about 20 microns," respectively. Nagel's method teaches away from "an excessive proportion" of either very large or very fine particles. See Office Action, page 2; See Nagel, col. 6, lines 17-26 and 34-37, reproduced below for convenience (emphasis added).

> ...I have found that <u>an excess of coarse particles in a fluidized bed of the composition tends to cause an undesirable</u> surging of the bed and to produce imperfect coatings which are frequently grainy in appearance.
>
> On the other hand, <u>an excessive proportion of fine particles is undesirable</u>, since the small particles are blown out of the bed more readily than larger particles with losses predominantly in the 0-5 micron particle size range...
>
> As already noted <u>particles under 5 microns in diameter tend to agglomerate and form larger masses</u> of solids even in the complete absence of tackiness of the resinous component of the composition.

In contrast to Nagel's teaching that particles under 5 microns in diameter should be avoided, Applicant's Examples 1, 2, and 3 indicate that a powder with an average size of 6.5, 4.9, and 7 microns are obtained. Notably, an excessive portion of the powder particles of Examples 1-3 will have a size are under 5 microns. Therefore, in spite of the teachings of Nagel, such powders are acceptable for coating according the method of claims 5 and 6.

Thus, Nagel teaches away from a method for powder coating where the powder has an "average diameter of less than about 30 microns" and an "average diameter of about 3 to about 20 microns," as recited in claims 5 and 6, respectively, because a proportion of the powder described by above features will also have a diameter below 5 microns.

Furthermore, Applicants' admitted prior art recites the use extrusion and pulverization methods, resulting in a powder composition that consist of irregularly shaped particles in a wide range of sizes (see specification, paragraph [0006]), and does not teach the method of powder coating with the uniform particles with an "average diameter of less than about 30 microns" and an "average diameter of about 3 to about 20 microns," as recited in claims 5 and 6.

For at least the reasons discussed above, claims 5 and 6 would not have been rendered obvious by Applicants' alleged admitted prior art, Nagel and Sacripante. Accordingly,

favorable reconsideration and withdrawal of the rejection with respect to claims 5 and 6 are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application is earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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